

L 10952-67.

ACC NR: AT6036571

have a positive effect on the maintenance of regulatory mechanism functions (Lamb et al., Sjostrand). It is well known that athletic training improves the quality of circulatory apparatus regulation. The quality of cardiac activity in athletes in a state of rest is maintained by powerful cholinergic effects which are most pronounced in the case of endurance training.

These considerations determined the goal of the present investigation, which studied the effect of 10 days of strict bed-rest on the electrical activity of the heart and on indices of cardiodynamics and arterial pressure in highly-qualified weight-lifters and long distance runners. The dynamics of these indices were studied during maximal strain (treadmill speed and endurance runs) and passive orthostatic tests daily for 3 days before and after hypokinesia. The functional state of the circulatory apparatus in the athletes under study indicated a high state of training. At the same time, differences were noted between the weight-lifters and light athletes (slower heart rhythm in runners at rest, persistence of respiratory arrhythmia in orthostasis, the appearance of electrical alternation during strain, the character of changes in atrial ventricular conductivity during muscular effort and orthostatic tests and so forth); these differences were due to the more pronounced effects of the vagus nerve in the runners.

Card 2/4

ACC NR: AT6036571

Exposure to hypokinesia resulted in near equalization of the differences in the above-mentioned cardiac activity indices. During hypokinesia, the runners showed more pronounced shifts than under initial conditions. Changes in cardiac rhythm, electrical activity of the heart, and the phase structure of the left ventricular systole (both at rest and during exertion) indicated impairment of the quality of cardiac activity regulation and a decrease in the contractility of the myocardium. V. Ye. Vasil'yeva noted a decrease in the rate of propagation of pulse waves along muscular-type vessels in these same subjects. It should be noted that orthostatic tolerance was greater in the weight-lifters than in the runners.

A notable increase occurred in the amplitude of the  $Tv_1-2$  waves, apparently due to the elimination of the hydrostatic factor, temporary increase in venous return (Sjostrand), and pooling of blood in the respiratory loop (V. V. Parin). This suggests that the increased  $Tv_1-2$  is related to intensified functional activity of the right heart.

Normalization of indices of the functional state of the circulatory apparatus was complete by the 2nd to 3rd day after the end of hypokinesia. Athletic training gives advance assurance that changes in cardiac activity regulation will have a more favorable character than in untrained persons. At the same time these changes do not depend on the degree of vagotonia.

Card 3/4

L 10952-67

ACC NR: AT6036571

(since in runners, the functional shifts were more pronounced than in the weight-lifters). [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 4/4

BABSKIY, Ye.B., akademik; IOFFE, L.A.; KARPMAN, V.L.

Frontal vectordynamocardiogram. Dokl. AN SSSR 134 no.2:485-488  
S '60. (MIRA 13:9)

1. Institut normal'noy i patologicheskoy fiziologii Akademii  
nauk SSSR. 2. AN USSR (for Babakiy).  
(VECTOCARDIOGRAPHY)

KARPMAN, V.L.; IOFFE, L.A.

Physiological analysis of the transverse dynamocardiogram. Biol.  
eksp. biol. i med. 50 no. 11:8-13 N '60. (MIRA 13:12)

1. Iz laboratorii klinicheskoy fiziologii (zav. - akademik AN  
USSR Ye.B. Babitskiy) Instituta normal'noy i patologicheskoy fiziologii  
(dir. - deystvitel'nyy chlen AMN SSSR V.N. Chernigovskiy) AMN  
SSSR, Moskva.

(HEART) (ELECTROCARDIOGRAPHY)

KARPMAN, V.L., kand.med.nauk; ABRIKOSOVA, M.A.; IOFFE, L.A.; OLENINA, N.S.;  
SADOVSKAYA, G.V.

Contractility of the myocardium in cardiac aneurysms.

Kardiologiya 2 no.3:35-40 My-Je '62.

(MIRA 16:4)

1. Iz laboratorii klinicheskoy fiziologii (zav. - akademik  
AN UkrSSR Ye.B.Bab'skiy) Instituta normal'noy i patologicheskoy  
fiziologii (dir. - deystvitel'nyy chlen AMN SSSR V.V.Parin)  
AMN SSSR i Instituta terapii (dir. - deystvitel'nyy chlen AMN  
SSSR A.L.Myasnikov) AMN SSSR.

(HEART-DISEASES)

(ANEURYSMS)

IOFFE, L.A.

Changes in the dynamocardiogram in hypertension. Kardiologiya  
3 no.3:39-44, My-Je'63. (MIRA 16:9)

1. Iz laboratorii klinicheskoy fiziologii (zav. - akademik  
AN UkrSSR Ye. H. Babakiy) Instituta normal'noy i patologicheskoy  
fiziologii (dir. - deystvitel'nyy chlen AMN SSSR V.V. Parin ) AMN SSSR i iz Instituta terapii (dir. - deystvitel'nyy  
chlen AMN SSSR A.L. Myasnikov) AMN SSSR.  
(HYPERTENSION) (CARDIOGRAPHY)

IOFFE, L.A.; ANKHIN, L.A.; KOMAROV, B.D.

Changes of cardiac activity in myasthenia during the use of anticholinesterase preparations (oxasil and proserine).

Terap. arkh. 34 no.12:99-104 D'62.

(MIRA 16:6)

1. Iz laboratorii klinicheskoy fiziologii (zav. - akad. AN UkrSSR Ye.B.Babakiy) Instituta normal'noy i patologicheskoy fiziologii AMN SSSR i iz fakul'tetskoy khirurgicheskoy kliniki (direktor - akademik A.N.Bakulev) II Moskovskogo meditsinskogo instiuta imeni N.I.Pirogova.

(MYASTHENIA GRAVIS) (HEART--DISEASES)  
(PARASYMPATHOMIMETICS)



KUKOLEVSKIY, Georgiy Mikhaylovich; IOFFE, L.A., red.

[Medical supervision in physical culture] Vrachebnyi  
kontrol' v fizicheskoi kul'ture. Moskva, Meditsina,  
1965. 310 p. (MIRA 18:7)

10FFE L.G.  
YOFFE, L.G.

Hydraulic pipe-bending machine with a crank-type servedrive.  
Mashinostroenie no.3:24 My-Je '63. (MIRA 16:7)

(Pipe bending—Equipment and supplies)

IOPPE, Ianshey Khatskelevich

[Potato and vegetable procurement; a practical manual] Zagotovka  
kartofelia i ovoshchei; prakticheskoe posobie. Moskva, TSentro-  
soiuz, 1957. 250 p. (MIRA 11:5)  
(Potatoes--Marketing) (Vegetables--Marketing)



IOFFE, L. M.

PA 75100

USSR/Electricity  
Furnaces, Electric  
Controls, Electric

May 1948

"Automatic Control of Electric Resistance Furnaces."  
V. V. Kndryartsev, L. M. Ioffe, L. P. Shvaley, K. I.  
Gluahkov, P. I. Selivanov, B. S. Popov, Plant imeni  
Molotov, Ministry of Armament, 1 p

"Prom Energet" No 5

Staff of above plant did not allow shortage of elec-  
tric automatic controls to prevent increased output.  
Designed and installed a thermocouple-potentiometer  
type system, a circuit diagram of which is reproduced.  
Suggestion was awarded a fifth prize in All-Union  
competition.

75126

IOFFE, L. M., POPOV, L. V., and RUTSHTYIN, D. S.

"Stroboscopic Temperature Measurement of AC Current Arc," Uch. zap. Kazansk, un-ta, 113, 9, 1953, pp 111-117

The temperature of an ac arc discharge was measured from intensities of CuI and FeII lines and from the rotational structure of the OH 3064  $\text{\AA}$  band. Different Temperature values were found, depending on which line was used for computation. It was concluded that the temperature of the arc is low at the beginning and end of the discharge and reaches its maximum in the middle of the flare (RZhFiz, No 7, 1955) SO: Sum. No. 713, 9 Nov 55

IOFFE, L.M.

373.32 5

AUTHOR: Levitan, G.I.

SOV-115-58-4-24/45

TITLE: DC Amplifiers with Contact Converters (Usiliteli postoyannogo toka s kontaktnym preobrazovatelem)

PERIODICAL: Izmeritel'naya tekhnika, 1958, Nr 4, pp 54-59 (USSR)

ABSTRACT: DC amplifiers with contact conversion of the voltage being measured from dc into ac are widely used in measuring equipment. The reasons for the instability of the contact converter (vibro-converter or polarized relay type) are discussed, and the fault traced to instability in the spacing of the converted pulses, leading to errors in measurement. This can be cured by deep negative feedback and by adopting a full-wave amplitude rectification system (Figure 6a) in which the current passing through the instrument is proportional to the sum of the output voltage amplitudes and its value therefore independent of the spacing of the pulses. The value of the input impedance and problem of inertness are also discussed. The author and L.M.Ioffe, working in the Electric Geophysical Survey Laboratory at the VNII

Card 1/2

SOV-115-58-4-24/45

DC Amplifiers with Contact Converters

metodiki i tekhniki razvedki (The All-Union Research Institute for Surveying Methods and Equipment), have produced a portable dc amplifier with a sensitivity threshold of 50 microvolts, impedance of 2.5 megohms and small inertia (Figure 11). The contact converter consists of an RP-4 polarized relay oscillating at 80 c and with an actuating capacity of 1-2 mw. The measurement range is 5mv-5v. Total gain factor is 7200 cut twice by 3.5 and 3.2 times through negative feedback. Readings on the instrument proved to be independent of pulse spacing variations within the limits of  $\pm 30\%$ . There are 6 circuit diagrams, 5 graphs, 1 table and 3 references, 2 of which are Soviet and 1 American.

1. Amplifiers--Design    2. Frequency converters--Design

Card 2/2



*Ioffe, L.M.*  
IOFFE, L.M.; KOMAROV, V.A.; SEMENOV, M.V.

Use of a.c. industrial stray currents prospecting. Vop.rud.geofiz.  
no.1:128-130 '57. (MIRA 10:10)  
(Prospecting--Geophysical methods) (Terrestrial electricity)

IOFFE, L. M., KOMAROV, V. A., KHLOPONINA, L. S., SEMENOV, M. V.

"Induced Polarization in Rocks and Ores and Its Use in Electro-Prospecting"

(New Developments in the Methods and Techniques of Geological Exploration)  
Leningrad, Gostoptekhnizdat, 1958. 423 p. (Series: Its: Sbornik trudov I)

80V/169-59-5-4558

Translation from: Referativnyy zhurnal, Geofizika, 1959, Nr 5, p 41 (USSR)

AUTHORS: Komarov, V.A., Ioffe, L.M., Khloponina, L.S., Semenov, M.V.

TITLE: Induced Polarization of Rocks and Ores and Its Utilization in Electric Prospecting ✓

PERIODICAL: Tr. Vses. n.-i. in-ta metodiki i tekhn. razvedki, 1958, Nr 1, pp 236 - 257

ABSTRACT: The authors note that the conclusions of various investigators on the possibilities and the methods of detecting ore bodies on the basis of the data of the induced polarization method (IP), are contradictory. In connection with this fact, the necessity arose to study more in detail the IP of rocks and ores both in the laboratory and under field conditions, and also to elaborate the practice of observations of IP fields and to design equipment guaranteeing the reliability of measurements. A device has been developed, which allowed the performing of oscillographic registration of the curves of diminution of  $\Delta U_{IP}$  and other quantities, and ensured a sufficiently accurate measure-

Card 1/2

SOV/169-59-5-4558

Induced Polarization of Rocks and Ores and Its Utilization in Electric Prospecting

ment of instantaneous values of the IP field in 0.25 sec after turning off the current under laboratory conditions and in 0.5 sec under field conditions. The practice and the method of the field investigations have been developed providing for a performance of 100 and more observations per day. Laboratory investigations have found out the dependences of the polarizability  $\eta$  of ion conducting rocks on the humidity, the concentration of the solutions, and the resistance. The presence of conducting minerals in the rocks causes a sudden increase of  $\eta$ , and this fact can be used as a main criterion for the detection of ore anomalies by the results of the IP method. The performed investigations indicate a certain outlook of applications of the IP method to prospecting ore deposits, in particular of ingrained type which is less suitable for other methods of electric prospecting. ✓

A.A. Smirnov

Card 2/2

S/132/60/000/011/001/002  
A054/A130

AUTHORS: Alekseyev, A. M., Ioffe, L. M., Semenov, M. V., Mogil'nikov, V. I.,  
Morozov, N. V.

TITLE: Experience with the new  $\text{B}\Pi(\text{VP})$ -59 type electric testing equipment  
to be used in the induced polarization method

PERIODICAL: Razvedka i okhrana nedr, no. 11, 1960, 47 - 49

TEXT: The VNIIGeofizika Institute has designed in cooperation with the  
VITR a new type of electric testing station, (VP-59) to be mainly used in pros-  
pecting electron-conductive (sulfide) impregnated ores by means of induced polari-  
zation, vertical electric sounding and dipole sounding. The station is mounted  
on two  $\Gamma\text{A3}(\text{GAZ})$ -69 type trucks with increased power for crossing heavy terrain  
and consists of a generator and a receiving unit. Current for the feed line in  
the generator equipment is supplied by a  $\Pi\text{H}(\text{PN})$ -100 type generator (11.5 kw, nomi-  
nal voltage 460 v). The generator is driven by the engine of the truck via a  
special power take-off gear box. In the measuring instrument the difference of  
transmission potentials  $\Delta V_{\text{tr}}$  and induced polarization ( $\Delta V_{\text{ip}}$ ) are registered by  
an  $3\text{H0}(\text{EPO})$ -7 type oscillograph on photogenic paper. (Abstractor's note: tran-

Card 1/5

Experience with the.....

S/132/60/000/011/001/002  
A054/A130

scripts tr (transmission) and ip (induced polarization) have been substituted for the original  $\eta p = pr = \text{propusk}$  and  $\beta n = vp = \text{vzdvannaya polarizatsiya}$ ). To increase the input voltage in the measuring-registering instrument, 3AA(EDA)-58 type auto-compensators are mounted which make measuring possible at any kind of earthing of the receiving electrodes. The sensitivity of the measuring channels is 1-1000 mv for the full scale of the oscillograph; the input resistance of the instrument is 2 megaohm, the error in measuring does not exceed 2%; there is no zero-creep at the auto-compensators. The principal measuring operations and the control of the generator are automatic. The equipment was tested in an anticlinal folding containing galenite, sphalerite, in some places also bornite, chalcopyrite, etc. The ores have an impregnated or oocarde texture or are found in massives. The sulfide mineralization is dispersed in nearly all tectonic zones. Some ore bodies are oxidized from the surface, the depth and extent of oxidation is not uniform. The tests with the induced polarization method were carried out in sections through the thickest parts of the ore layer, which were selected in such a way to make it possible to examine the effect of primary mineralization at a depth of 30 m, covered by a superstratum 15 - 20 m thick. The tests were carried out by vertical electrical sounding, following the VITR method. (Ref. 1. V. A. Komarov, L. M. Ioffe, M. V. Semenov: The method of induced polarization, ONTI VITR, publ. 20. 1959). When

Card 2/5

S/132/60/000/011/001/002

A054/A130

Experience with the.....

working with vertical electric sounding the spacing taken for AO was 500 m, when working with profiling, AB was 1000 m. The spacings were chosen according to the curve of vertical sounding, (Fig. 1). By taking a spacing of 1000 m, it was possible to register anomalies above the mineralized layers in the working area. With a generator voltage of 100 - 600 v and with 4 - 12 a in the feed line, a voltage ( $\Delta V_{tr}$ ) could be obtained in the receiving line which was not lower than some tens of millivolts. As receiving line a thin strip was used provided with a commutator, switching in turn one of the five pairs of non-polarizing receiving electrodes. Based on the calculated values of  $\Delta U_{ip}$  and  $\Delta V_{tr}$  and the known current intensity  $i$  in line AB, the following values have been determined:

$$\eta_K = \frac{\Delta U_{ip}}{\Delta V_{tr}} \quad 100\%$$

$$\rho_K = K \frac{\Delta V_{tr}}{i}$$

which were plotted in graphs according to the profiles or in vertical electric sounding curves. Figure 1 shows  $\eta_K$  and  $\rho_K$  curves obtained when working with the vertical electrical sounding of induced polarization, for determining (at picket 17, profile 50) the optimum length of line AB, for surveying according to the Card 3/5

Experience with the.....

S/132/60/000/011/001/002  
A054/A130

average gradient, to evaluate the obtained  $\eta_K$  values above the mineralization zone and to define the thickness of the overburden and the oxidized zones. The  $\eta_K$  value of vertical electrical sounding remains unchanged at 0.4% until the half-spacing  $AO = 15$  m. With an increase in spacing, the value  $\eta_K$  also increases which indicates the presence of primary sulfide minerals in the section. The maximum value for  $\eta_K : 3.5\%$  was obtained at a semi-spacing of  $AO = 500$  m, where  $\eta_K$  still had not reached its limit. According to the curve  $\eta_K$  of vertical electric sounding the total thickness of overburden and oxidized layers, where no electron-conductive minerals are present, can be assumed to be 30 m. The curve  $\eta_K$  indicates that from  $AO = 250$  m the shape of the curve is influenced by the higher conductivity of the oxidized zone and by some screening object. Figure 2 represents the survey of profile 50 by induced polarization at a distance of 700 m. It is pointed out, that the high values of  $\eta_K$  are connected with the presence of dispersed impregnated sulfides in lime stone. When moving away from the mineralization zone,  $\eta_K$  decreases from 3 to 2%. The tests proved that it is possible to reveal on the sections the presence of massive and impregnated minerals, and to determine the distribution of the impregnation of sulfides. There are 2 figures and 1 Soviet reference.

ASSOCIATIONS: VNII Geofizika, VITR, Uz.GITsGFP, Tsentral'naya geofizicheskaya partiya, (VNII of Geophysics, VITR, Uz.GITsGFP, Central Geophysical Party)

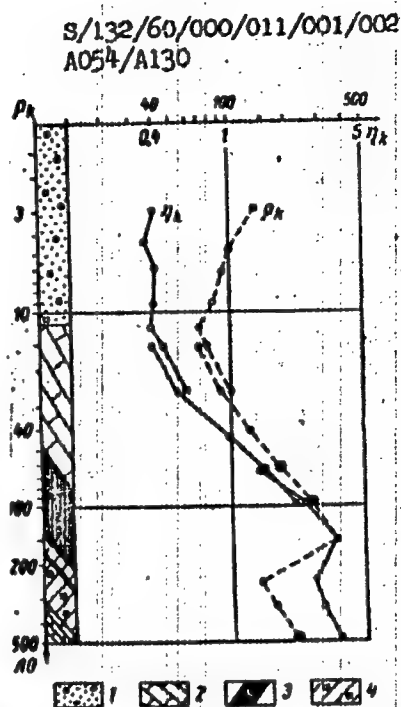
Card 4/5



Experience with the.....

Figure 1: Graphs  $\eta_K$  and  $P_K$  of vertical electric sounding in induced polarization (picket 17, of the profile)

1 - overburden, 2 - massive limestone, 3 - ore body, 4 - zone of intensive crushing with the accumulation of impregnated sulfides



Card 5/5

IOFFE, L.P.; VESELKOVSKIY, R.V., red.

[Analyzing the various methods of fortifying tower cooking acid] Analiz razlichnykh sposobov ukrepleniia bashennoi kisloty. Moskva, TSentr. nauchno-issl. in-t informatsii i tekhniko-ekon. issledovaniia po lesnoi, tselliulozno-bumazhnoi derevobrabatyvaiushchei promyshl. i lesnomu khoz., 1963. 26 p. (MIRA 17:9)

IOFFE, L.R., starshiy bibliograf; FEL'DMAN, I.A., inzh., red.; BAMA, N.G., red.; DROZHZHINA, L.P., tekhn. red.

[Short bibliography on the economics and operation of the merchant marine] Kratkii bibliograficheskii ukazatel' literatury po ekonomike i ekspluatatsii morskogo flota. Leningrad, Izd-vo "Morskoi transport," 1959. 101 p. (MIRA 14:10)

1. Leningrad. Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota. 2. Nauchno-tekhnicheskaya biblioteka Tsentral'nogo nauchno-issledovatel'skogo instituta morskogo flota (for Ioffe). (Bibliography—Shipping)

*IOFFE, L.S.*  
BERENSHTEYN, M.G., inzhener; GAL'PERIN, I.I., kandidat tekhnicheskikh nauk;  
~~IOFFE, L.S.~~ inzhener; KOMISSAROV, L.A., inzhener; RABINOVICH, A.V.,  
inzhener; SHCHEGLYAYEV, A.V.

Control system for a new series of average-capacity turbines. Teple-  
energetika 4 no.1:3-7 Ja '57. (MLRA 10:3)

1. Chlen-korrespondent AN SSSR (for Shcheglyayev). 2. Vsesoyuznyy  
teplotekhnicheskiy institut im. Dzerzhinskego; Ural'skiy turbe-  
motoray saved; Bryanskiy parovozostroitel'nyy saved.  
(Turbines) (Automatic control)

IOFFE, L. S.

Congenital valve of the ureter. Urologia no. 6:63-64 '61.  
(MIRA 15:4)

1. Iz urologicheskogo otdeleniya (zav. A. M. Shatin) Kurganskoy  
oblastnoy bol'nitsy.

(URETERS—ABNORMITIES AND DEFORMITIES)

IOFFE, I. Sh.

Radical of a module. Sib. mat. zhur. 5 no.4:820-826. J1-Ag<sup>164</sup>  
(MIRA 17:8)

IOFFE, L.TS.

Broncho-subdiaphragmatic-hepatic fistulas. Trudy Inst.klin.i eksp.  
khir. AN Kazakh.SSR 5:72-75 '59. (MIRA 13:5)  
(FISTULA)

IOFFE, L. TS

Electrophysiological investigation of local shock. Trudy Inst. klin.  
i eksp. khir. AN Kazakh. SSR 6:120-135 '60. (MIRA 13:12)  
(ELECTROPHYSIOLOGY) (SHOCK)



IOFFE, L.TS.

Electrophysiological characteristics of wound stupor. Trudy  
Inst.klin. i eksp.khir. AN Kazakh.SSR no.7:8-41 '61. (MIRA 15:3)  
(WOUNDS) (STUPOR)

IOFFE, L.TS.; ISAMBAYEV, M.I.; POPOV, T.A.

Use of general and local anesthesia in esophagoscopy. Trudy  
Inst. klin. i eksp. khir. AN Kazakh. SSR 9:152-155 '63.  
(MIRA 17:12)

IOFFE, M., inzh.

Large-panel houses in Angarsk. Zhil.stroi. no.10:8-10  
'59. (MIRA 13:2)  
(Angarsk-Apartment houses) (Cinder blocks)

*Ioffe, M.*  
GALANIN, N.; AGEYEV, P.; IOFFE, M.; KYUPAR, A.; RAMM, I.; SHAFIR, A.

Using sewage for field irrigation. Gig. i san. 22 no.9:73-74 S '57.  
(MIRA 10:12)

1. Predsedatel' pravleniya Leningradskogo otdeleniya Vserossiyskogo obshchestva gigiyenistov (for Galanin). 2. Chleny pravleniya Leningradskogo otdeleniya Vserossiyskogo obshchestva gigiyenistov (for Ageyev, Ioffe, Kyupar, Ramm, Shafir)

(SEWAGE

utilization for irrigation of fields)

(IRRIGATION

utilization of sewage)

IOFFE, M. D.

Metabolism, Chlorophyll, Plants

Presence of Chlorophyll in the endosperm of Cruciferae. Dokl. AN SSSR, 82, No. 3, 1952.  
Botanicheskiy Institut im. V. L. Komarova  
Akademii Nauk SSSR recd. 15, Oct. 1951

SO: Monthly List of Russian Accessions, Library of Congress, June 1952 1953, Uncl.

IOFFE, M.D.

Development of the embryo and endosperm in wheat, horse beans,  
and radishes. Trudy Bot.inst.Ser.7 no.4:211-269 '57.

(MIRA 10:3)

(Botany--Embryology) (Wheat) (Beans) (Radishes)

IOFFE, M.D.

YAKOVLEV, M.S.; IOFFE, M.D.

Characteristics of the embryogenesis of the genus *Paeonia* L.  
Bot.zhur. 42 no.10:1491-1502 0 '57. (MIRA 10:10)

1. Botanicheskiy institut im. V.I.Komarov AN SSSR, Leningrad.  
(Peonies)

YEKOVLEV, M.S. and IOFFE, M.D.

"On a New Type of Embryogenesis in Paeonia L."

International  
report presented at the Ninth/Botanical Congress, Montreal, Canada, August, 1959.



YAKOVLEV, M.S.; IOFFE, M.D.

Further study of a new type of embryogenesis in angiosperms. Bot.  
zhur. 46 no.10:1402-1421 0 '61. (MIRA 14:9)

1. Botanicheskiy institut imeni V.L. Komarova AN SSSR, Leningrad.  
(Botany--Embryology) (Peonies)

IOFFE, M.D.

Embryology of *Trochodendron aralioides* Sieb. et Zucc.; development  
of pollen and embryo sac. Trudy Bot.inst.Ser. 7 no.5:250-259  
'62. (MIRA 15:2)

(Trochodendron) (Botany--Embryology)

ALEKSANDROV, V.G.; IOFFE, M.D.

Mikhail Semenovich Iakovlev; on his 60th birthday. Bot. zhur.  
47 no.10:1549-1551 0 '62. (MIRA 15:12)

1. Botanicheskiy institut imeni V.I. Komarova AN SSSR,  
Leningrad.

(Iakovlev, Mikhail Semenovich, 1902-)

PERVUKHINA, N.V.; IOFFE, M.D.

Morphology of a Troshodendron flower; materials on the phylogeny of angiosperms. Bot. zhur. 47 no.12:1709-1730 D '62. (MIRA 16:6)

1. Botanicheskiy institut imeni V.L.Komarova AN SSSR, Leningrad.  
(Troshodendron) (Inflorescence)

IOFFE, M.D.; ZHUKOVA, G.Ya..

Culture of isolated angiosperm embryos in an artificial medium.  
Bot. zhur. 50 no.8:1157-1182 Ag '65. (MIRA 18:10)

1. Botanicheskiy institut imeni W.I. Komarova AN SSSR, Leningrad.

IOFFE, M. I.

Physician

Dissertation: "The Dynamics of Electrocardiographic Changes During Myocardial Diseases."  
Cand Med Sci, Inst of Experimental Medicine, Acad Sci Latvian SSR, 1 Jul 54. (Sovetskaya  
Latviya, 20 Jun 54)

SO: SUM 318, 23 Dec 1954

EZERIYETIS, E. [Ezerietis, E.]; IOFFE, M. I.

Electrocardiographic changes during the induction of experimental  
aneurysms of the heart and its resection. Izv. AN Latv. SSR  
no.5:109-118 '62. (MIRA 16:7)  
(Aneurysms) (Electrocardiography)

ZUSSER, A.P.; IOFFE, M.I.

Constructing buildings by the method of lifting stories.  
Prom.stroi. 38 no.4:32-38 '60. (MIRA 13:8)

1. Treat No.19 Olavleningradstroy (for Zusser).
2. Lengiprogor (for Ioffe).  
(Precast concrete construction)



IOFFE, M.I.

Operation of a tailings storage pond at the Mirgalinsay Ore  
Dressing Plant. TSvet, met. 34 no.2:10-16 F '61. (MIRA 14:6)  
(Mirgalinsay—Tailings (Metallurgy)

GAL'PERIN, L.Yu.; ZUSSER, A.P.; IOFFE, M.I.; MINTS, V.M.; SIZOV, A.A.;  
STAROVOYTOV, I.F., red. izd-va; PUL'KINA, Ye.A., tekhn. red.

[Experience in the design and erection of buildings by elevat-  
ing the stories] Opyt proektirovaniia i montazha zdaniia meto-  
dom pod"ema etazhei. Leningrad, Gosstroizdat, 1962. 147 p.  
(MIRA 15:8)

(Precast concrete construction)  
(Hoisting machinery)

OGURTSOV, Sergey Alekseyevich; IOFFE, M.K., red.; MIL'NIKOV, F.I.,  
tekhn.red.

[Mikhail Vasil'evich Pevtsov, geographer and traveler] Mikhail  
Vasil'evich Pevtsov; geograf-puteshestvennik. Omsk, Omskoe  
knizhnoe izd-vo, 1960. 54 p. (MIRA 14:1)  
(Pevtsov, Mikhail Vasil'evich, 1843-1902)

KORENKOV, Viktor, laureat Stalinskoy premii; KOLMSNIK, P.A., redaktor;  
IOFFE, M.L., redaktor; PETROVSKAYA, Ye., tekhnicheskij redaktor

[Driving the ZIS-150 truck] Opyt raboty za rukam avtomobilia.  
ZIS-150. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva  
RSFSR, 1951. 49 p. (MLRA 8:3)  
(Automobile drivers) (Motor trucks)

KRAINSKIY, E.; POLIN, B.; IOFFE, M.L., redaktor; DUBAKH, N.Ya., retsensent;  
GUROVA, O.A., tekhnicheskij redaktor

[Bus driver innovators] Shofery-novatory. Moskva, Izd-vo Ministerstva  
kommunal'nogo khoziaistva RSFSR, 1950. 35 p. (MIRA 7:9)  
(Motorbuses)

YEFREMOV, I.S.; MOLODYKH, I.A., redaktor; IOFFE, M.L., redaktor;  
PETROVSKAYA, Ye., tekhnicheskiy redaktor

[Trolley buses] Trolleibussy. Moskva, Izd-vo Ministerstva kommunal'-  
nogo khoziaistva RSFSR. Pt.1. [Mechanical equipment] Mekhaniche-  
skoe oborudovanie. 1951. 295 p. [Microfilm] (MLRA 7:10)  
(Trolley buses)

KANIOVSKIY, P.V.; YEVREINOV, D.V., redaktor; IOFFE, M.L., redaktor;  
PETROVSKAYA, Ye.; tekhnicheskii redaktor

[Organization of automotive transport service] Organizatsiia pere-  
vozok na avtomobil'nom transporte. Moskva, Izd-vo Ministerstva kom-  
munal'nogo khoziaistva RSFSR, 1951. 349 p. (MLRA 8:6)  
(Transportation, Automotive)

IOFFE, M.L.

VOLKOV, G.I.; PNEKHANOV, I.P., inzhener, redaktor; IOFFE, M.L., redaktor; KONYASHINA, A., tekhnicheskiy redaktor.

[Adjustments on ZIS-150 and ZIS-151 automobiles] Regulirovka mekhanizmov avtomobilei ZIS-150 i ZIS-151. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1953. 95 p. (MIRA 7:11)  
(Automobiles--Maintenance)



CHISTOV, G.V.; GUS'KOVA, T.M.; IOFFE, M.L., redaktor; GUROVA, O.A.,  
tekhnicheskii redaktor.

[Interchangeable units and parts of automobiles] Vzaïmozame-  
niaemye agregaty i detali avtomobilei. Moskva, Izd-vo Ministerst-  
va kommunal'nogo khoziaistva RSFSR, 1954. 160 p. (MLRA 7:8)  
(Automobiles)

ABRAMOVICH, A.D.; IOFFE, M.L., redaktor; GUROVA, O.A., tekhnicheskii  
redaktor

[Technical operating characteristics of automobiles] Eksploatatsionno-tekhnicheskie kharakteristiki avtomobilei. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1954. 169 p.  
(Automobiles) (MIRA 7:10)

KANIOVSKIY, P.V., professor; SMIRNOV, O.S., redaktor; IOFFE, M.L.,  
redaktor; PETROVSKAYA, Ye., tekhnicheskiy redaktor

[Management and planning of automotive transportation] Organizatsiya  
i planirovaniye avtomobil'nykh perevozok. Moskva, Izd-vo ministerstva  
kommunal'nogo khoziaistva RSFSR, 1954. 343 p.

[Microfilm]  
(MIRA 7:9)

(Transportation, Automotive)

KUTYLOVSKIY, M.P.; SURGUCHEV, V.D.; KOLODYKH, I.A., redaktor; IOFFE, M.L.,  
redaktor; PETROVSKAYA, Ye., tekhnicheskii redaktor.

[Electric traction in city transportation] Elektricheskaya tiaga na  
gorodskom transporte. Moskva, Izd-vo Ministerstva kommunal'nogo  
khoziaistva RSFSR, 1954. 354 p.  
(Electric railroads)

(MLRA 7:12)

YEFREMOV, I.S.; MARKOVNIKOV, V.L., kandidat tekhnicheskikh nauk, retsen-  
zent; KILENNIKOV, V.M., inzhener, nauchnyy redaktor; TRAKHTMAN, L.M.,  
kandidat tekhnicheskikh nauk, nauchnyy redaktor; IOFFE, M.L., ra-  
daktor izdatel'stva; GUROVA, O.A., tekhnicheskii redaktor.

[Trolley buses; principles of theory, design and calculations]  
Trolleibussy; osnovy teorii, konstruktii i rascheta. Moskva, Izd-  
vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1954. 479 p.  
(Trolley buses) (MIRA 7:11)

ALIKSEYEV, M.V.; SMIRNOV, V.M.; DEMIDOV, P.G., redaktor; IOFFE, M.L.,  
redaktor; PETROVSKAYA, Ye., tekhnicheskiiy redaktor.

[Fire prevention in technological processes in connection with the  
handling of liquid fuels and inflammables] Pesharnaya profilaktika  
v tekhnologicheskikh protsessakh, svyazannykh s obrashcheniem goru-  
chikh i legkovosplameniaiushchikhsia zhidkostei. Moskva, Izd-vo Mi-  
nisterstva kommunal'nogo khoziaistva RSFSR, 1955. 290 p. [Microfilm]  
(Fire prevention) (Liquid fuels) (MIRA 8:5)

BRONSHTEYN, Lev Abramovich, dotsent, kand.tekhn.nauk; ALEKSANDROV, L.A., kand.ekon.nauk, retsentsent; USHAKOV, B.P., kand.tekhn.nauk, retsentsent; KUDRYAVTSEV, A.S., prof., doktor ekon.nauk, zasluzhennyy deyatel' nauki i tekhniki RSFSR, obshchiy red.; IOFFE, M.L., red.; MAL'KOVA, M.V., tekhn.red.

[Organisation and planning of automotive transportation units]  
Organisatsiia i planirovanie avtotransportnykh predpriatii.  
Moskva, Nauchno-tekhn.ind-vo M-va avtomobil'nogo transp. i  
shosseinykh dorog RSFSR, 1959. 439 p. (MIRA 13:2)

1. Moskovskiy inzhenerno-ekonomicheskiy institut imeni Sergo  
Ordshonikidze (for Ushakov).  
(Transportation, Automotive)

ARKHANGEL'SKIY, Yu.A., otv. za vypusk; ATABEKOV, L.P.; GUBIN, S.A.; KLEYKOV, V.S.; KOROTKOV, V.I.; KLYCHKOV, P.F.; LUTSKER, T.D.; LOBACHEV, V.M.; MEKKEL', M.A.; MANUSADZHYANTS, Zh.G.; SIVAKON', L.F.; KHAYKIN, V.A.; IOFFE, M.L., red.; NIKOLAYEVA, L.N., tekhn. red.

[Safety regulations for truck transportation enterprises] Pravila tekhniki bezopasnosti dlia predpriatii avtomobil'nogo transporta. Moskva, Nauchno-tekhn. izd-vo M-va avtomobil'nogo transp. i shosseynykh dorog RSFSR, 1961. 71 p. (MIRA 14:7)

1. Profsoyuz rabotnikov svyazi, rabochikh avtomobil'nogo transporta i shosseynykh dorog. TSentral'nyy komitet. 2. TSentral'nyy komitet profsoyuza rabotnikov svyazi rabochikh avtomobil'nogo transporta i shosseynykh dorog (for Arkhangel'skiy). 3. Ministerstvo avtomobil'nogo transporta Kazakhskoi SSR (for Atabekov). 4. Ministerstvo avtomobil'nogo transporta i shosseynykh dorog RSFSR (for Gubin). 5. Moskovskiy avtomobil'no-dorozhnyy tekhnikum (for Kleykov, Korotkov). 6. Moszheldoravtopogruz (for Klychkov). 7. Ministerstvo avtomobil'nogo transporta i shosseynykh dorog USSR (for Lutsker). 8. Tekhnicheskaya inspektaiya Moskovskogo gorodskogo i oblastnogo sovetov profsoyuzov (for Lobachev, Mekkel'). 9. Laboratoriya okhrany truda Nauchno-issledovatel'skogo instituta avtomobil'nogo transporta (for Manusadzhants). 10. Ministerstvo avtomobil'nogo transporta i shosseynykh dorog Latvyskoy SSR (for Sivakon'). 11. Glavnoye upravleniye gruzovogo avtotransporta Mosgorispolkoma (for Khaykin).
- (Transportation, Automotive—Safety measures)



IOFFE, M. M. Cand. Geograph. Sci.

Dissertation: "Stratus and Cumulo-Stratus Clouds and Conditions Governing Flight in Them". Central Inst. of Weather Forecasting 27 May 1947.

SO: Vechnyaya Moskva, May 1947 (Project #17836)

86-1-26/30

**AUTHORS:** Sorokovik, N.S., Col, Docent, Candidate of Technical Sciences; Arutyunov, V.L., Col; Ioffe, M.M., Engr Col, Docent, Candidate of Geographical Sciences; Koshevoy, A.A., Engr Lt Col, Docent, Candidate of Technical Sciences.

**TITLE:** New Handbook for Air Navigators (Novyy spravochnik aviatsionnogo shturmana)

**PERIODICAL:** Vestnik Vozdushnogo Flota, 1958, Nr 1, pp. 81-83 (USSR)

**ABSTRACT:** This article is a critical review of the book "Handbook for Air Navigators" (Spravochnik aviatsionnogo shturmana), edited by V.I. Sokolov, Maj Gen of the Air Force, and published by the Military Publishing House of the Ministry of Defense of USSR in Moscow, 1957, 416 pages.

**AVAILABLE:** Library of Congress

Card 1/1

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000618630001-6

SECRET  
CONFIDENTIAL  
TOP SECRET

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000618630001-6"

AUTHOR: Dneprenko, K. V., and Ioffe, M. M.

133-10-18/26

TITLE: **Elimination of Decarbonization of Alloy Steel While Annealing in Protective Media.** (Ustraneniye Obezuglerozhivaniya Legirovannoy Stali Pri Otzhige v Zashchitnykh Sredakh).

PERIODICAL: Stal', 1957, No.10, pp. 934-935 (USSR).

ABSTRACT: A study of various protective atmospheres on decarbonization of steel and of conditions under which this can be prevented is described. On the Zaporozhstal' Works during the annealing (700-715°C for 8 hours) of cold and hot rolled sheets from steels 25XrCA and 25XrGA in a protective atmosphere obtained by an incomplete combustion of a mixture of coke-oven - blast furnace gas (10-11% CO<sub>2</sub>, 11-12% CO, 5-6% H<sub>2</sub>) a large percentage of defects (up to 37%) due to decarbonization was observed. For this reason the described investigation was carried out. In laboratory studies specimens cut from sheets of 25X CA steel (% 0.28C, 0.98 Mn, 1.03Si, 0.016 P, 0.020 S and 0.86 Cr) were annealed at temperatures 650, 700, 745°C for 10 hours and at 830°C for 3 hours. Decarbonization was taking place at temperature 700°C Card 1/3 (Fig. 1) and above, By passing the protective gas

133-10-18/26

Elimination of Decarbonization of Alloy Steel While Annealing  
in Protective Media.

through charcoal at 1000°C (decreasing CO<sub>2</sub> content from 8.9% to 1%) the decarbonization process was stopped. Similar results were obtained when from the protective atmosphere formed by an incomplete combustion of coke-oven, blast furnace gas mixture CO<sub>2</sub> and H<sub>2</sub>S were removed by absorption with ethylamine. Industrial experiments were carried out with sheets from 25X7CA, 30X7CA and 25X7CA by annealing in packets and coils at 700-715°C for 8 hours and 3 hours without protective atmosphere. In all cases a considerable degree of decarbonization took place. In similar experiments but with a protective atmosphere with a CO/CO<sub>2</sub> ratio = 1, a noticeable decarbonization took place. In further experiments protective gas was enriched with kerosene (1-2 litres per 4 hours) however, some decarbonization was still noticeable. On the suggestion of V.F. Kopytov the protective gas was passed over the surface of benzole. As the proportion of benzole in gas, under other conditions constant, depends on the surface area of the evaporating surface, a number of tanks of various diameters were tested (as in Fig. 2). The best results Card 2/3 were obtained with a tank of 500 mm in diameter. On

133-10-18/26

Elimination of Decarburisation of Alloy Steel During Annealing  
in Protective Media.

annealing of sheets with a benzole enriched gas the degree of decarburisation was much decreased and on annealing of steel in coils, decarburisation was completely absent. It is stated that using benzole enriched gas, or by purifying gas from  $\text{CO}_2$  and  $\text{H}_2\text{S}$  defects due to decarburisation were completely eliminated. There are 2 figures.

ASSOCIATION: The Institute of Utilisation of Gas of the Academy of Sciences of the Ukrainian SSR and Zaporozhstal' Works.  
(Institut Ispol'zovaniya Gaza AN USSR i Zavod Zaporozhstal')

AVAILABLE: Library of Congress

Card 3/3

*Ioffe, M. M.*

AUTHOR: Ioffe, M. M., Petrenko, A. G., and Chub, G. F. Engineers. 133-10-19/26

TITLE: The Influence of Technological Factors on the Electromagnetic Properties of Cold Rolled Transformer Steel. (Vliyaniye Tekhnologicheskikh Faktorov Na Elektromagnitnye Svoystva Kholodnokatanoy Transformatornoy Stali).

PERIODICAL: Stal', 1957, No.10, pp. 936-940 (USSR).

ABSTRACT: During the mastering of the production of cold rolled transformer steel 0.35 and 0.50 mm thick, 750 x 750 mm., Zaporozhstal' Works together with TsNIICHM carried out an investigation of the influence of various technological factors on the magnetic properties of steel. The following factors were studied: the influence of silicon and carbon content, vacuum treatment of liquid steel, the influence of a preliminary annealing of hot rolled strip on properties of cold rolled steel and the influence of vacuum annealing. The dependence of specific losses of cold rolled transformer steel 0.5 mm thick on the content of silicon and carbon, Table 1. A comparison of electromagnetic properties of cold rolled transformer steel untreated and treated in vacuo, Table 2 and Figure 3. Mechanical and magnetic properties of transformer steel cold rolled with and without a preliminary annealing, Tables 3 and 4 respectively. The influence of the temperature of vacuum annealing on the electromagnetic

Card 1/3

The Influence of Technological Factors on the Electromagnetic Properties of Cold Rolled Transformer Steel. 133-10-19/26

properties of cold rolled transformer steel - Table 5. It is concluded that: the optimum silicon content in the transformer steel under operating conditions of the works is 2.9 - 3.3%, further increase in silicon content has no practical influence on the magnetic properties while it makes cold rolling more difficult. The content of carbon in finished sheets varied from 0.010 to 0.015%, a decrease in carbon content within those limits leads to only a small decrease in specific losses. Decarburisation takes place only during preliminary annealing. Vacuo treatment of the liquid steel produces a decrease in the contents of carbon and sulphur in the metal. A more accurate study of the influence of vacuum treatment on decreasing specific losses is necessary. Increasing the temperature of annealing in vacuo (20-40 mm Hg) above 1100°C does not lead to a further decrease in specific losses. The following participated in the work: I.L. Zlatkin, S.M. Popov, N.A. Troshchenkov and M.I. Veklich. There are 5 tables, 5 figures and 3 references, all are Slavic.

Card 2/3



133-10-19/26  
The Influence of Technological Factors on the Electromagnetic  
Properties of Cold Rolled Transformer Steel.

· ASSOCIATION: Zaporozhstal' Works and TsNIICHM. (Zavod  
Zaporozhstal' i TsNIICHM).

AVAILABLE: Library of Congress

Card 3/3

*Ioffe, M. M.* 133-10-22/26

AUTHOR: Ioffe, M. M. and Popov, S. M. Engineers.

TITLE: An Increase of Productivity of Vacuum Furnaces for Annealing of the Transformer Steel. (Povysheniye Proizvoditel'nosti Vakuumnykh Pechey Dlya Otzhiga Transformatornoy Stali).

PERIODICAL: Stal', 1957, No. 10, p. 948.

ABSTRACT: Modification of vacuo-annealing practice on the Zaporozhstal' Works is described. With normal practice the total duration of annealing treatment for transformer steel was 130-140 hours, consisting of heating to soaking temperature 24-25 hours, soaking 24 hours and cooling to 600°C under vacuo - 80-90 hours. The cooling procedure was modified as follows: cooling to 950°C under vacuo, breaking vacuo with MX gas (10% CO<sub>2</sub>, 12% CO, 6% H<sub>2</sub>, the rest nitrogen), replacing of the hot bell by a cold one (about 200°C, in individual cases 400-500°C) and the formation of secondary vacuo and cooling to 600°C. In this way the duration of cooling was reduced from 85 hours to 47-50 hours. Moreover, utilising the heat of the bell for the heating of the next charge shortens the heating time by about 5 hours and gives a power economy of 148 kW h/ton. The metal obtained with the new practice had similar electromagnetic properties as that annealed

Card 1/2

133-10-22/26

· An Increase of Productivity of Vacuum Furnaces for Annealing  
· of the Transformer Steel.

by the old practice. Bending tests in all cases  
satisfied the requirements of GOCT 802-54.

ASSOCIATION: Zaporozhstal' Works. (Zavod Zaporozhstal').

AVAILABLE: Library of Congress

Card 2/2

AUTHORS: Tarasevich, N. I., ~~Ioffe, M. M.~~, Popov, S.M.,  
Veklich, M. I., Drausal', A. V., ~~Dikovskiy, A.M.~~,  
Merkulov, V. G. and Arno, B. E. SOV/94-58-8-8/22

TITLE: Increasing the Output of Hood-type Electric Furnaces  
with Economy of Electric Power (Ekonomiya elektroenergii  
i uvelicheniye proizvoditel'nosti kolpakovykh  
elektropechey)

PERIODICAL: Promyshlennaya Energetika, 1958, Nr 3, pp 20-21 (USSR)

ABSTRACT: This suggestion was awarded third prize in an All-Union  
Power Economy Competition. In the manufacture of  
transformer steel high temperature annealing is carried  
out under vacuum at a temperature of 1180°C. This  
operation is carried out in special vacuum hood-type  
electric furnaces. The sheet steel in the furnace is  
protected by muffles which in their turn are covered by  
the hood which contains electric heaters and water-cooled  
vacuum seal. The annealing period includes a cooling  
time which reduces the output of the furnace and increases  
the power output because the heat in the hood is wasted.  
The furnaces were reconstructed in such a way that when  
the heating period is over the hot hood is quickly

Card 1/2

SOV/94-58-3-8/22  
Increasing the Output of Hood-type Electric Furnaces with Economy  
of Electric Power

replaced by a cold one and transferred to the next furnace that requires heating. Inert gas is used to protect the sheet steel during the short period in which the vacuum is broken. Cooling is now more rapid than before and less power is used.

Card 2/2

18.5100.18.7100

77462  
SOV/133-60-1-23/30

**AUTHORS:**

Petrushko, A. G., Kurtova, L. A., Chub, G. P., Ioffe, M. R., Popov, B. N., Sterlin, R. L. (Engineers)

**TITLE:**

Physical Metallurgy and Heat Treatment... The Effect of Intermediate Annealing in Hydrogen on Specific Losses of Cold-Rolled Transformer Steel

**PERIODICAL:**

Stal', 1960, No. 1, pp 71-73 (USSR)

**ABSTRACT:**

This is a brief report concerning the experimental production that proposed to establish the possibility of decreasing carbon content in the transformer steel. The intermediate annealing in bell furnaces (with protective atmosphere of DKh-gas-a mixture of coke and blast furnace gas) was replaced by annealing in tunnel-type furnace and bell furnace with the protective atmosphere of dry hydrogen. M. I. Yeklich, V. Shirdakov, G. G. Kuznetsov, and G. N. Novikov participated in the work. The investigated steel had following chemical composition: C, 0.02-0.04; Mn, 0.08-0.14; Si, 2.90-3.26; P, 0.004-0.007; S, 0.005; Cu, traces-0.03; Al, 0.03-0.15. The results of tests of steel under various conditions are given in Tables 1, 2, and 3. The authors arrive at the following conclusions. (1) The application of double decarburization annealing of the strip 0.85-0.70 and 0.50-0.35 mm thick in a tunnel-type furnace in hydrogen atmosphere facilitates the production of steel with lower carbon content and smaller specific losses than in the case of intermediate annealing of steel in bell furnaces in DKh-gas atmosphere. (2) The cold-rolled transformer steel of investigated series, which passed the double intermediate annealing in the tunnel-type furnaces in the atmosphere of drying hydrogen (and after high-temperature annealing of sheets in the vacuum additional annealing for elimination of work-hardening), has magnetic induction  $B_{50}$  from 18,700 to 19,300 gauss, and specific losses for sheets 0.50 mm thick  $P_{10}$  from 0.80 to 0.84 and  $P_{15}$  from 1.12 to 1.86 watt/kg, and for sheets 0.35 mm thick  $P_{10}$  from

Card 1/6

Card 2/6

Table 1. Electric and magnetic properties of cold-rolled transformer steel which passed through the intermediate annealing in bell furnace in DKh-gas atmosphere (A) and in tunnel furnace in hydrogen atmosphere (B).

Thickness of sheet, mm	Magnetic induction $B_{50}$ , gauss				Specific losses, watt/kg			
	$P_{10}$	$P_{15}$	$P_{20}$	$P_{30}$	$P_{10}$	$P_{15}$	$P_{20}$	$P_{30}$
0.50	18.700	18.800	18.900	19.000	0.80	0.82	0.84	0.86
0.50	18.800	18.900	19.000	19.100	0.82	0.84	0.86	0.88
0.50	18.900	19.000	19.100	19.200	0.84	0.86	0.88	0.90
0.50	19.000	19.100	19.200	19.300	0.86	0.88	0.90	0.92
0.35	18.700	18.800	18.900	19.000	1.12	1.14	1.16	1.18
0.35	18.800	18.900	19.000	19.100	1.14	1.16	1.18	1.20
0.35	18.900	19.000	19.100	19.200	1.16	1.18	1.20	1.22
0.35	19.000	19.100	19.200	19.300	1.18	1.20	1.22	1.24
Average	18.850	18.950	19.050	19.150	0.83	0.85	0.87	0.89
Average	18.850	18.950	19.050	19.150	1.15	1.17	1.19	1.21

Card 3/6

18.5100.18.7100

Physical Metallurgy and Heat Treatment.  
The Effect of Intermediate Annealing in  
Hydrogen on Specific Losses of Cold-Rolled  
Transformer Steel

77462  
50V/133-60-1-21/30

0.57 to 0.66 and  $P_{15}$  from 1.22 to 1.41 watt/kg. (3)  
For manufacturing of higher grades of transformer steel  
according to the All-Union State Standard 802-58 (GOST  
802-58) it is advisable to build at metallurgical  
plants the tunnel-type furnaces, which ensure the most  
intensive decarburization (heating in dry hydrogen,  
cooling in humid, reaching the strip (counters) to its  
annealing) on both sides by hydrogen). The intermediate  
annealing in the tunnel-type furnace, with tension of  
heated (750-800° C) strip, results also in the  
diminishing of its waviness and warping. There is 1  
figure; 3 tables; and 2 Soviet references.

ASSOCIATION:

Central Scientific Research Institute of Ferrous Metal-  
lurgy and the "Zapovozhstal'" and "Elektrostal'" Plants  
(TENTICHN L'AVODY "Zapovozhstal'" i "Elektrostal'")

77462, 50V/133-60-1-21/30

Table 3. Electric and magnetic properties of cold-rolled transformer  
steel, which passed through the intermediate and final, high-temperature  
annealing in coils in bell furnace in the atmosphere of dry hydrogen.

Temper- ature, °C	Electrical properties				Magnetic properties			
	$\rho_{20}$	$\rho_{100}$	$\rho_{150}$	$\rho_{200}$	$B_{100}$	$B_{150}$	$B_{200}$	$B_{250}$
0.50	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.55	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.60	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.65	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.70	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.75	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.80	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.85	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.90	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.95	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
1.00	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85

77462, 50V/133-60-1-21/30

Table 2. Electric and magnetic properties of annealed (in tunnel  
furnace in hydrogen atmosphere) cold-rolled transformer steel after  
addition annealing.

Temper- ature, °C	Electrical properties				Magnetic properties			
	$\rho_{20}$	$\rho_{100}$	$\rho_{150}$	$\rho_{200}$	$B_{100}$	$B_{150}$	$B_{200}$	$B_{250}$
0.50	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.55	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.60	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.65	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.70	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.75	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.80	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.85	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.90	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
0.95	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85
1.00	0.0175	0.0175	0.0175	0.0175	1.85	1.85	1.85	1.85

Card 4/6

NATAPOV, B.S.; BARZII, V.K.; OL'SHANETSKII, V.Ye.; Prinsipali uchastiyet  
 FILONOV, V.A., inzh.; YUDIN, M.I., inzh.; IOFFE, M.M., inzh.;  
 POPOV, S.M., inzh.; RYBALKO, G.I., inzh.; ODINETS, L.I., inzh.;  
 SIGALKO, F.V., inzh.; TSIVIRKO, D.Ye.; VOLOSHCHUK, M.D., inzh.

Heat treatment of cold-rolled sheet metal. Stal' 22 no.2:163-  
 165 F '62. (MIRA 15:2)

1. Zaporozhskiy mashinostroitel'nyy institut i zavod  
 "Zaporozhstal'". 2. Zavod "Zaporozhstal'" (for Filonov,  
 Yudin, Ioffe, Popov, Rybalko, Odinets). 3. Zaporozhskiy  
 mashinostroitel'nyy institut (for Sigalko, Tsivirko, Voloshchuk).  
 (Sheet steel—Heat treatment)



BARZIY, V.K., inzh.; ~~IOFFE, M.M., inzh.~~; CHERKASHINA, N.P., inzh.;  
ORLOVA, T.I., inzh.

Increasing the corrosion resistance of electrically welded  
1Kh18N9T steel pipe. Stal' 22 no.10:944 0'62. (MIRA 15:10)

1. Zaporozhskiy staleplavil'nyy zavod.  
(Pipe, Steel—Corrosion)

NATAPOV, B.S.; SOROKO, L.N.; BARZIY, V.K.; FILONOV, V.A. [deceased]; GURSKIY, G.L.;  
IOFFE, M.M.; LETCHFORD, M.I.; YUDOVICH, S.Z.

Improving the stampability of nonaging O8IU sheet steel. Stal' 23  
no.1:84-86 Ja '63. (MIRA 16:2)

1. Zaporozhskiy mashinostoritel'nyy institut, zavod "Zaporozhstal"  
i Gor'kovskiy avtomobil'nyy zavod.  
(Sheet steel) (Drawing (Metalwork))

KSENZUK, F.A., inzh.; KHUDAS, A.L., inzh.; TROSHCHENKOV, N.A., inzh.;  
GAMERSHTEYN, V.A., inzh.; AKIMOV, E.P., inzh.; IOFFE, M.M., inzh.;  
VEKLICH, M.I., inzh.; ANTIPENKO, V.G., inzh.; TILIK, V.T., inzh.;  
FILONOV, V.A., inzh. [deceased]; BORISENKO, V.G., inzh.

At the "Zaporozhstal'" plant. Stal' 23 no.6:554, 562, 572, 575  
Je '63. (MIRA 16:10)

OFFER, M.S.		Secondary electron emission from vacuum																																																																																																					
C A		<p>Secondary electron emission from vacuum. J. V. Nechaev. <i>J. Exptl. Theoret. Phys.</i> (U.S.S.R.) 11, 881-5 (1941).--The curve <math>\sigma = f(V_0)</math> for the coeff. of secondary electron emission <math>\sigma</math> as a function of the energy of the primary electrons from a K surface passes through a max. of 0.69 at about 200 volts for a fresh layer and of 1.10 at 230 volts after 1 hr. The max. value of <math>\sigma</math> as a function of voltage finally reaches a value of 1.1 and then again decreases. The energy distribution of secondary electrons from the K surface is the same as that for other metal surfaces. P. H. Rothmann.</p>																																																																																																					
Chair Electricity, Physics Faculty, Leningrad State Univ.		3																																																																																																					
ASB-51A METALLURGICAL LITERATURE CLASSIFICATION																																																																																																							
<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td> </tr> </table>				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100				

IOFFE, M. S.

"Source of Multiply Charged Nitrogen Ions for a Cyclotron," by  
P. M. Morozov, B. N. Makov, and M. S. Ioffe, Atomnaya Energiya,  
Vol 2, No 3, Mar 57, pp 272-275

The construction of an ion source for producing nitrogen ions with  
five charges in a cyclotron is described.

Construction is based on the intense ionization by electron impact  
which occurs in an oscillating discharge in a longitudinal magnetic  
field.

Sectional and schematic diagrams, construction details, materials  
used, and operating characteristics are given. (U)

SUM. 1260

I. F. F. MS

## PLANE 1. WORK EXPLANATION 007/2713

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Radlyayevskikh submythi) polucheniye i primeneniye izotopov (Reports of Soviet Scientists) Production and Application of Isotopes, Moscow, Atomizdat, 1959, 368 p. (Series: Itz: Trudy, vol. 6) 5,000 copies printed.

Ms. (Title page): G.V. Radlyayev, Academician, and I.I. Bortnikov, Corresponding Member, USSR Academy of Sciences; Ed. (Inside book): L.N. Andreyenko; Tech. Ed.: L.N. Andreyenko.

PURPOSE: This book is intended for scientists, engineers, physicists, and biologists engaged in the production and application of atomic energy to peaceful uses; for professors and graduate and undergraduate students of higher technical schools where nuclear sciences is taught; and for the general public interested in atomic sciences and technology.

CONTENTS: This is volume 6 of a 6-volume set of reports delivered by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 contains 52 reports on: 1) modern methods for the production of stable radioactive isotopes and their labeled compounds, 2) research results obtained with the aid of isotopes in the field of chemistry, metallurgy, medicine, biology, and agriculture, and 3) chemistry of isotopes. Volume 6 was edited by G.V. Radlyayev, Academician, and I.I. Bortnikov, Corresponding Member, USSR Academy of Sciences; and L.N. Andreyenko, Academician, USSR Academy of Sciences. The book is one of the series of "Medical Sciences" and "Physics" for titles of volumes of the set. References appear at the end of the articles.

3. Yablonsky, G.M., and V.I. Belov. Means of Producing Stable Control Methods in the Radiochemical Laboratories of the USSR (Report No. 2305)

4. Baluy, M.P., A.G. Zel'dovich, A.I. Fridman, and L.N. Andreyenko. Chemical Production of Deuterium by the Low-Temperature Distillation Method (Report No. 2303)

5. Gerasimov, I.O., R.Ya. Rubtsov, and V.I. Tolstopyanov. Separation of Isotopes by Diffusion in a Steam Flow (Report No. 2306)

6. Zolotarev, V.A., A.I. Zil'va, and Yu.G. Zhurav. Separation of Isotopes on Electromagnetic Units in the Soviet Union (Report No. 2307)

7. Alkoyev, B.A., S.F. Polyak, V.A. Zolotarev, R.Y. Pukh, Ya.S. Chervakov, and G.Ia. Shubshin. Separation of Isotopes of Rare-earth Elements by the Electromagnetic Method (Report No. 2317)

8. Krasov, P.M., R.E. Kharov, M.S. Lur'ya, R.S. Zhuravov, and G.M. Frodin. Ion Source for the Separation of Stable Isotopes (Report No. 2301)

9. Kozlov, M.V., and P.M. Krasov. Electric Field Effect in Ion Beams on Stable Isotope Separation by the Electromagnetic Method (Report No. 2308)

10. Radlyayev, G.V., P.M. Kozlov, G.I. Yermolov, and L.N. Andreyenko. The Use of Radioactive Isotopes in Metallurgical Research (Report No. 2318)

11. Smolovskiy, R.S., V.A. Yablonskiy, and L.N. Andreyenko. The Theory and Practice of Isotope-type Instruments Based on Radioactive Isotopes (Report No. 2322)

12. Radlyayev, G.V., G.I. Zhurav, and R.S. Zhuravov. Studying the Mechanism of Protection of Building Structures Against Neutron Corrosion (Report No. 2309)

13. Krasov, G.V., and L.N. Andreyenko. The  $\gamma$ -ray,  $\beta$ -ray, and  $\alpha$ -ray as Sources of Radiation for Checking Thin-walled Products (Report No. 2323)

14. Kozlov, M.V., A.S. Zerkov, and G.I. Kozlov. Studying the Redistribution of Elements in Metal Alloys and Their Compounds by Autoradiography and Microscopic Methods (Report No. 2324)

15. Gerasimov, I.O., A.I. Yermolov, V.S. Yermolov, G.O. Rykova, G.I. Radlyayev. Studying the Diffusion and Migration of Elements in Alloys of Aluminum and Titanium by the Radioactive Isotope Method (Report No. 2325)

84/5/30  
AUTHORS:

Demchenko, V.L., Luk'yanov, S.N., Spivak, G.V. and  
Shtrom, I.G.

TITLE:

Report on the Second All-Union Conference on Gas  
Electronics

SYNOPSIS:

Abstracts of papers presented at the Second All-Union Conference on Gas Electronics, 1979, Vol. 3, No. 8.

ABSTRACT:

This conference was organized by the Academy of Sciences, the Ministry of Higher Education and Moscow State University.

G.B. Pogol'ten - "Methods of Reducing the Energy Loss in the  
Penetration of a High-Voltage Discharge into a Gas"  
V.I. Kuznetsov - "Microdischarges and  
Microstreamers in Gaseous Media"  
V.A. Slonimskiy and G.P. Kabanov - "Investigation of the  
Processes of Ionization and Development of a High-Voltage  
Discharge in Vacuum"

S.M. Kuznetsov and G.V. Melnikova - "The Character-  
istics of Ionization in High-Vacuum in Negative Fields"  
G.V. Kuznetsov et al. - "The Problem of the Transfer of the  
Material during the Pre-breakdown Stage in Vacuum"  
S.M. Kuznetsov et al. - "The Problem of the Transfer of the  
Material during the Pre-breakdown Stage in Vacuum"

The third section dealt with the problems of electric  
discharges in gases and their practical applications. It was  
headed over by I.B. Stekol'nikov. The following papers  
were presented:

V.I. Lomov et al. - "Probe Investigation of the a.s.  
Current Fields"  
V.I. Lomov et al. - "Elementary Processes in the Ionization  
Zone of Corona-Type Conductors at Atmospheric Pressure"  
V.A. Slonimskiy - "Appearance of a Corona Discharge in  
Hydrogen and Nitrogen"

P.A. Chelobanov et al. - "Some Properties of the Corona  
Discharge in Gaseous Media"  
P.A. Chelobanov et al. - "Some Properties of the Corona  
Discharge in Gaseous Media"

V.A. Slonimskiy and A.A. Nik - "Production of High  
Temperature by Means of Spark Discharge"  
V.A. Slonimskiy et al. - "Influence of the Magnetic Field of  
the Electric Discharge on the Dividing Surface of Two Media"

I.B. Stekol'nikov - "New Data from the Study of Long  
Sparks"  
V.A. Slonimskiy - "Properties of the Breakdown of Compressed  
Air in a Comparatively Uniform Field in the Presence of  
Localized Non-uniformities"

V.A. Slonimskiy et al. - "Measurement of the Discharge Lag  
in Plasma Tubes" (see p. 129 of the journal).  
A paper by the author dealt with the problem of the  
theory of the electric erosion (see p. 130 of the  
journal).  
The fourth section was presided over by S.N. Luk'yanov  
and was concerned with the non-stationary and low-  
frequency discharges. The following papers were read:  
I.B. Stekol'nikov and A.A. Labud - "The Nature of the  
Current Interruption During the Electric Explosion of  
a Metal Wire"

V.A. Slonimskiy - "Propagation of Plasma from Local Pulse  
Sources"  
G.O. Tsimfayev et al. - "Observation of an Electro-  
optically Compressed Arc by Means of an Electro-optical  
Method"  
M.G. Ioffe and Ya.Ya. Yushmanov - "Investigation of  
the Electric Field in an Ion Magnetron"  
V.A. Slonimskiy and M.G. Ioffe - "Experiments with an  
Electron Model of a System with Negative Samples"  
A.M. Andrianov et al. - "Distribution of Magnetic and Electric  
Fields in a Negative Pulse Discharge"  
G.M. Kargin (England) - "Spectroscopic Determination  
of the Plasma Temperature in the 'Zeta' Equipment"  
(see p. 136 of the journal).  
The paper by Harding aroused a lot of interest and  
Academician V.A. Arslanov expressed the opinion that  
the electron and ion currents in the 'Zeta' should  
be of the same order of magnitude according to Harding.  
The electron temperature is 10<sup>4</sup> K, which is higher than the  
ion temperature.

88433

S/056/60/039/006/022/063  
B006/B056

26.2321

AUTHORS: Ioffe, M. S., Sobolev, R. I., Tel'kovskiy, V. G.,  
Yushmanov, Ye. Ye.

TITLE: Investigation of the Confinement of Plasma in a Trap With  
Magnetic Plugs

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 39, No. 6(12), pp. 1602 - 1611

TEXT: A report is given on plasma confinement in a cylindrical magnetic mirror which is some 10 cm in size. The experiments were carried out with a hydrogen plasma having a mean density of  $\sim 1 \cdot 10^9 \text{ cm}^{-3}$ , at a minimum pressure of the neutral gas of  $\sim 3 \cdot 10^{-7} \text{ mm Hg}$ . The mean ion energy was 1 - 2 kev, the electron energy  $\sim 10 \text{ ev}$ ; the magnetic field was 5 - 8 koe. In this case, it is possible to reckon with adiabatic and quasineutral conditions, i.e. the Larmor radius of the ions is small compared with the trap dimensions, and the Debye screening radius is small compared with the region filled by the plasma. The greatest losses in fast ions occur as a

Card 1/4



88433

Investigation of the Confinement of Plasma in a Trap With Magnetic Plugs S/056/60/039/006/022/063  
B006/B056

result of charge exchange with the neutral gas. The experimental arrangement, in which the experiments were carried out, is shown in Fig.1. The maximum field in the center of the trap (constant in time), was 8000 oes, and in the plugs it was 12,400 oes, i.e. the plug ratio was 1.55. The mean lifetime  $\tau$  of the fast ions in the trap was measured as a function of pressure for different accelerating voltages, magnetic fields, and plug ratios in the hydrogen pressure range of  $3 \cdot 10^{-7}$  -  $2 \cdot 10^{-5}$  mm Hg. The experimentally determined  $1/\tau$ -values are, as shown, indeed linear functions of pressure, as must be expected also of charge exchange processes. Also the flux of fast neutral particles and therefore also the current of secondary electrons in the range of  $2 \cdot 10^{-7}$  -  $3 \cdot 10^{-6}$  mm Hg is a linear function of pressure. If pressure is reduced, the neutral-particle flux tends toward zero (and not toward a constant value). Among the processes developing in the plasma, there may also be the process  $H^+ + H_2 \rightarrow H + 2H^+$ , which fact has been pointed out by G. I. Budker. However, it was found that the ion escape from the trap takes place much more quickly than would be expected, if only charge exchange and scattering processes are taken

Card 2/4

88433

Investigation of the Confinement of Plasma  
in a Trap With Magnetic Plugs

S/056/60/039/006/022/063  
B006/B056

into account. Thus, additional losses of fast ions must be assumed, whose time dependence was investigated. It was found that the losses not connected with charge exchange decrease with time until eventually they vanish completely. Such anomalous losses of ions are due to the presence of plasma in the trap. If the density of the charged particle is so low that the Debye range is of the same order as the trap dimensions, the losses are equal to zero. The authors thank Academician L.A. Artsimovich and B. B. Kadomtsev for their interest, advice, and discussions, V. M. Petrov, E. N. Braverman, and Yu. T. Bayborodov for their technical collaboration. There are 9 figures, 2 tables, and 11 references: 7 Soviet, 1 Swiss, and 2 US.

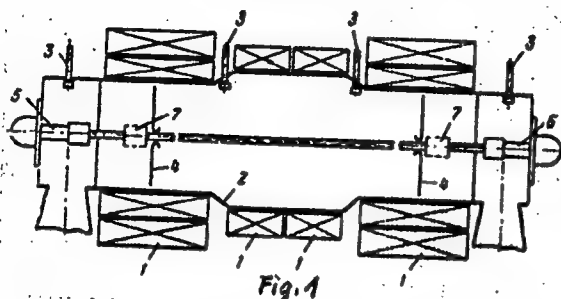
SUBMITTED: July 20, 1960

X

Card 3/4

88433

S/056/60/039/006/022/063  
B006/B056



Text to Fig.1: 1) Coils for generating the magnetic field. 2) Vacuum chamber. 3) Titanium vaporizer. 4) Diaphragms. 5) Plasma source. 6) Receiving electrode. 7) Top fixture.

Card 4/4

IOFFE, M. S. and YUSEMANOV, Ye Ye

"Experimental study of plasma instability in a magnetic mirror trap"

Report presented at the Conference on Plasma Physics and controlled Nuclear Fusion, Salzburg, Austria, 4-8 Sep 61

20676

S/120/61/000/001/007/062

E032/E114

26.2012

AUTHORS: Rayko, V.I., Ioffe, M.S., and Zolotarev, V.S.

TITLE: A Surface-Ionization Ion Source for the Separation of Isotopes of Alkali Elements

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No.1, pp.29-32

TEXT: The source was designed to produce high intensity beams and K and Rb ions in electromagnetic isotope separators. In comparison with the gas discharge sources, the present source has the advantage that oscillatory processes occurring in the discharge and affecting the ion beam are absent and the spectrum does not contain multiply-charged ions. The principle of the source is indicated in Fig.1, in which the working substance is loaded into the cylindrical furnace 1 in the form of a metal or salt. The furnace is heated by the two coaxial stainless steel cylinders 2 which are 0.15 mm thick and are heated by passing a current through them. The temperature is measured by the thermocouple 3. The vapour passes through the mixer 4 which is also made of stainless steel, and finally reaches the ionizer 5 through a gap (0.2-0.5 mm) between the ionizer 5 and the front Card 1/4

20676

S/120/61/000/001/007/062

E032/E114

A Surface-Ionization Ion Source for the Separation of Isotopes of Alkali Elements

lid 6 of the ionization chamber. The ionizer is in the form of a nickel box ( $18 \times 10 \times 200 \text{ mm}^3$ ) which contains a heater consisting of a few turns of molybdenum wire (1 mm in diameter). The power consumption of the latter is 400 W. The working surface of the ionizer facing the ion-optical system 7 is concave in order to focus the ion beam. The surface ionization coefficient calculated from the Saha-Langmuir equation for nickel is 99.9 at 1000 °K, while at 1728 °K it is 98.2 (the corresponding figures for tungsten are 87 and 68 respectively). Ions formed on the working surface of the ionizer are accelerated by the field between 6 and 7 and are focussed into an ion beam. The cross-section of the ion beam at the surface of the ionizer is  $8 \times 180 \text{ mm}^2$ . The cross-section is defined by the slit in the front lid 6 of the ionization chamber. This lid serves both as the first electrode of the accelerating system and as the limiting slit for the ion beam. The lid is air-cooled. Fig.3 shows the empirical relation between the ion current of  $\text{K}^+$  ions (mA) and

Card 2/4

20676

A Surface-Ionization Ion ..... S/120/61/000/001/007/062  
E032/E114

the temperature of the ionizer. Curves 1-4 correspond to different vapour pressures of potassium in the furnace (from p to 3.5 p). It is clear from these figures that at  $T = 1200^{\circ}\text{C}$  and above, the ion current becomes saturated and its magnitude is proportional to the number of K atoms at the surface of the ionizer. The maximum ion current of  $\text{K}^+$  ions obtained with the ionizer was 120 mA and the maximum working substance utilization coefficient was 43.2%. The efficiency of the ion sources of the above type was found to be comparable with that of gas discharge sources.

There are 3 figures and 5 tables.

SUBMITTED: February 8, 1960

Card 3/4

KRYMOV, I.F.; LYANDRES, R.Z.; IOFFE, M.S.

Trends in the development of the potato processing industry in White  
Russia. Trudy BNIPPT no.4:163-177 '61. (MIRA 17:20)



89202

S/056/61/040/001/007/037  
B102/B204

26.2321

AUTHORS:

Ioffe, M. S., Sobolev, R. I., Tel'kovskiy, V. G.,  
Yushmanov, Ye. Ye.

TITLE:

Escape of plasma from a magnetic mirror trap

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,  
no. 1, 1961, 40-48

TEXT: This paper is a continuation of an earlier paper (Ref. 1), in which the authors studied the retaining of a hydrogen plasma with a thickness of  $10^9$  cm<sup>-3</sup>, which consisted of fast ions (1-2 kev) and slow electrons (~10 ev). Anomalous fast escape of ions from the magnetic mirror trap could be found, which was caused not alone by the charge-exchange losses. In order to get to the bottom of this additional leakage, experiments were undertaken for the purpose of a direct measurement of the fast ions leaving the magnetic trap. The losses which occurred through the end walls, and which occurred through the lateral walls were studied separately. For the purpose of measuring the quantity of ions leaving the trap through the end walls (in the direction of the magnetic fields) a sector-shaped metal electrode (1/6 of

Card 1/8

89202

S/056/61/040/001/007/037  
B102/B204

Escape of plasma ...

the end-wall area), to which the -20 v were applied for the purpose of preventing an impinging of plasma electrons, was used. By means of the signals emitted from the sector, the charges conveyed to the sector by ions were measured. Fig. 1 shows the lateral and front view of the electrodes, as well as the comb-like arranged 8-plate electrodes, by means of which the quantity of ions (thus only that of the fast ions) could be determined additionally and independently. From the recordings of sector electrode and comb electrodes, the following quantities of fast ions

$\alpha$	1.33	1.55	2.0	2.35
$10^7 q_{\text{sect}}, \text{ coul.}$	3.3	8.7	12.8	10.8
$10^7 q_{\text{tot}}, \text{ coul.}$	46	125	200	200

and the following quantities of slow ions

Card 2/8  
5

89202

S/056/61/040/001/007/037  
B102/B204

Escape of plasma ...

	$\alpha$	1.33	1.55
$10^8$ $Q_{\text{sect}}$ , coul.		5.5	19.0
$10^8$ $Q_{\text{comb}}$ , coul.		2.4	7.6
$Q_{\text{slow}}/Q_{\text{fast}}$ , %		$\sim 5$	$\sim 15$

could be found to exist.  $\alpha = H_{\text{max}}/H_0$ .  $Q_{\text{tot}}$  is the total charge inciding upon the two end walls, due to the additional escape mechanism. The quantity of fast ions inciding upon the lateral walls (perpendicular to the H-field) was measured by means of an arrangement shown in Fig. 2. The electrodes had a size of 2.8 cm<sup>2</sup> and had a distance of 10 mm from the chamber wall. To the measuring electrode a -20 v was again applied. The measurements yielded the following results:

Card 3/8

5

89202

Escape of plasma ...

S/056/61/040/001/007/037  
B102/B204

$\alpha$	1.33	1.55	2.0	2.35
$10^6 Q_{\text{side}}$	0.83	1.8	4.4	5.8
$10^6 Q_{\text{tot}}$	1.9	5.3	16.3	23.2
$q_{\text{wall}} \%$	43	34	27	25

$Q_{\text{tot}}$  again denotes the total charge of fast ions inciding upon the lateral walls due to the mechanism of additional losses,  $q_{\text{wall}}$  is the ratio of these charges. Thus, up to 40% of the fast ions, leaving the trap in consequence of the mechanism responsible for the additional losses, may do so through the lateral walls. Fig. 3 shows a typical oscillogram of the current from the comb electrodes (a) and from the side wall (b). The results of these studies confirm the conclusions drawn in Ref. 1 with respect to the anomalously high fast ion losses. The major part of these losses, no less than

Card 4/8